

REMARKS

The Examiner has objected to claim 13 because the claim reads "downstream of the nonthermal plasmas" and should be "plasma" instead. Applicants have made such amendment to claim 14 (not 13) and also to claim 18, which also had the same typographical error. Applicants thank Examiner for diligence in identifying this error.

The Examiner has rejected claim 15 under 35 U.S.C. §102(b) as anticipated by US 6,363,714. The Examiner has objected to claims 16 and 17, which depend therefrom. Applicants have canceled claim 15, rewritten claim 16 to include all the limitations of claim 15, and amended rejected claim 18 to depend from claim 16, a now allowable claim. Applicants submit that claims 16-18 are not in allowable form and such allowance is requested.

Before discussing the particular rejections, it may be helpful to first review Applicants' invention in which the nonthermal plasma discharge device is being used to supplant an oxidation catalyst to convert exhaust gas NO to NO₂. To process the exhaust gases, the nonthermal plasma discharge device is located **within** the exhaust gas stream.

The Examiner has rejected independent claims 1, 11, 19, and 22 under 35 U.S.C. §103 as being obvious in view of Taylor, et al. (U.S. 6,843,054) combined with other references. Applicants have amended independent claims 1, 11, 19, and 22 to more particularly distinguish the instant invention over that of Taylor, et al. Applicant's invention, as shown in Figure 2, shows that the nonthermal plasma discharge device is located downstream of the engine and receives the exhaust gas stream from the engine. In Figure 1 of Taylor, et al., their plasma fuel reformer is not located downstream of the engine and **does not** receive exhaust gases from the engine. Instead, the fuel reformer of Taylor, et al. receives fuel from a fuel injector and air via an air inlet valve. In Figures 5 and 6 of Taylor, et al., it is obvious that the fuel reformer does not receive the exhaust gas stream, but instead provides an additional input, reformate, to that exhaust gas stream.

To clearly distinguish the present invention from Taylor, et al., Applicants have amended claim 1 stating: "a nonthermal plasma discharge device receiving the exhaust stream," which is not shown by Taylor, et al. In claim 11: "an exhaust aftertreatment system coupled downstream of the engine" and thereafter names the nonthermal plasma discharge device as part of the exhaust aftertreatment system which is downstream of the engine. In contrast, Taylor, et al. do not show the plasma device accepting exhaust gases from the engine. Similarly in claim 19: "wherein said nonthermal plasma discharge device receives an exhaust stream from the engine" and in claim 22: "a nonthermal plasma discharge device located downstream of said engine" which are all elements that are not shown by Taylor, et al.

The plasma fuel reformer of Taylor, et al., cannot be modified to accept the exhaust gas stream, to be similar to Applicants' configuration, because it defeats the invention of Taylor, et al. and because there is no motivation by Taylor, et al., or in combination with any other references to modify Taylor, et al. in this way. Because Taylor, et al. cannot be modified to provide the configuration of Applicants' invention, Taylor, et al. fails to serve as a primary reference by which Applicants' claims 1, 11, 19, and 22 can be rejected.

Applicants wish to also point out that in the invention by Taylor, et al., the fuel injector is coupled directly to the plasma fuel reformer, which is also in contrast to Applicant's invention. Applicants' claim 1 contains a limitation of : "a nonthermal plasma discharge device... located downstream of the injector" and claim 11 contains a similar limitation. Taylor, et al. cannot possibly show this limitation because their plasma fuel reformer does not receive the exhaust gas flow so there is no location upstream of the plasma fuel reformer at which to include an injector.

The Examiner has relied on a reference by Hoard (U.S. 5,746,984). Applicants wish to point out a fundamental difference between the '984 patent and the instant application. In the '984 patent, column 3, lines 29-33: "With respect to the direction of flow of the exhaust stream, the storage device is located **before** the terminus of the plasma reactor, and the storage device may

be located before the plasma reactor, overlap with the plasma reactor, or be located within the plasma reactor (emphasis added)." This cannot be construed to be that described in the present invention as stated in claim 1 including: "a NOx storage device located **downstream** of the nonthermal plasma discharge device (emphasis added)." When comparing the '984 patent and the instant application, the order of the components are reversed because the plasma device is being used to perform different functions. Again, there is no motivation in the '984 patent or other reference to reverse this order to show Applicants' invention.

Applicants submit that none of the references shows the configuration that Applicants have claimed in claims 1, 11, 19, or 22. Furthermore, there is no teaching to modify the configurations shown in the references to obtain what Applicants have claimed. Thus, claims 1, 11, 19, 22 and the claims which depend from them, directly or indirectly, 2-10, 12-14, 20-21, and 23-28, are in allowable form and such allowance is earnestly requested.

Based on the foregoing comments, the above-identified application is believed to be in condition for allowance, and such allowance is courteously solicited. If any further amendment is necessary to advance prosecution and place this case in allowable condition, the Examiner is courteously requested to contact the undersigned by fax or telephone at the number listed below.

Please charge any cost incurred in the filing of this Amendment, along with any other costs, to Deposit Account 06-1510. If there are insufficient funds in this account, please charge the fees to Deposit Account No.06-1505.

Respectfully submitted,

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